

Claims

What is claimed is:

- 5 1. A method for profiling a plurality of identities of a television viewing audience based on the interactivity of the identities with a television, the method comprising:
- monitoring user interactions with the television;
- filtering the user interactions into at least one interaction category;
- processing each of the at least one interaction categories in order to create at least one
- 10 category profile for each associated category, wherein each of the at least one category profiles identify attributes about the user for that category of interaction; and
- generating an interaction profile by combining all of the category profiles.
2. The method of claim 1, wherein the at least one interaction category includes at
- 15 least some subset of channels and volume levels.
3. The method of claim 1, wherein
- said monitoring includes monitoring time associated with each of the user interactions;
- and
- 20 said processing includes processing at least some subset of data from at least some subset of the at least one interaction category with respect to time in order to create at least one category profile.

4. The method of claim 3, wherein the at least one category profile includes at least some subset of channel viewing duration, channel dwell time, channel surf order, channel holding factor, channel volume level, channel selects, and channel change frequency.

5 5. The method of claim 1, further comprising
detecting an initiation of a television viewing session; and
detecting a termination of the television viewing session,
wherein said monitoring, filtering, processing and generating are continually performed
for the television viewing session in order to generate a session profile.

6. The method of claim 5, further comprising generating a signature profile based on the session profile.

7. The method of claim 6, further comprising storing the signature profile.

8. The method of claim 6, wherein said generating a signature profile includes correlating the session profile to a plurality of pre-existing signature profiles.

9. The method of claim 8, wherein said correlating includes correlating at least a
20 portion of the category profiles that make up the session profile with corresponding portions of category profiles that make up the plurality of pre-existing signature profiles.

10. The method of claim 9, wherein said correlating at least a portion of the category profiles includes applying weighting factors to the category profiles.

5 11. The method of claim 8, wherein said correlating is iteratively performed while the session profile is being generated.

12. The method of claim 8, wherein said generating a signature profile further includes determining if the session profile satisfies a correlation threshold with at least one of the pre-existing signature profiles.

13. The method of claim 12, wherein said generating a signature profile further includes

selecting the pre-existing signature profile having highest correlation value over the correlation threshold; and

updating the selected pre-existing signature profile to include the session profile.

14. The method of claim 13, wherein said updating includes updating the selected pre-existing signature profile by adding the session profile on a time weighted basis.

20 15. The method of claim 13, wherein said updating is done at a predetermined time interval.

16. The method of claim 15, wherein the predetermined time interval is an end of day part.

17. The method of claim 13, wherein said updating is done once the viewing session
5 has been terminated.

18. The method of claim 13, further comprising
comparing the updated signature profile to the plurality of pre-existing signature profiles
to determine whether the updated signature profile exceeds a threshold correlation with at least
10 one of the other pre-existing signature profiles; and

combining the updated signature profile with a most correlated pre-existing viewing
signature profile if the correlation threshold was exceeded.

19. The method of claim 18, wherein said comparing includes comparing at least a
portion of the category profiles that make up the updated signature profile with corresponding
15 portions of category profiles that make up the plurality of pre-existing signature profiles.

20. The method of claim 19, wherein said comparing at least a portion of the category
profiles includes applying weighting factors to the category profiles.

21. The method of claim 18, wherein said combining combines the updated viewing
signature profile and the most correlated pre-existing signature profile on a time weighted basis.

22. The method of claim 12, wherein said generating a signature profile further includes making the session profile a new signature profile when the session profile does not satisfy the correlation threshold with any of the pre-existing signature profiles.

5 23. The method of claim 5, further comprising
determining whether the session profile satisfies a minimum session threshold; and
discarding the session profile when the viewing session profile does not satisfy the
minimum session threshold.

10 24. The method of claim 23, wherein the minimum session threshold is a minimum
session duration.

15 25. The method of claim 7, further comprising
ranking the pre-existing signature profiles based on viewing attributes, when total number
of viewing signature profiles stored exceeds a pre-determined maximum number; and
discarding lowest ranked pre-existing signature profile.

20 26. The method of claim 25, wherein the viewing attributes include at least a subset
of total viewing duration and recency of signature profile modification.

27. The method of claim 8, wherein the pre-existing signature profiles are created and
stored independently of any session profiles of the television household audience.

28. The method of claim 5, wherein the at least one category profile is a viewing duration profile identifying various viewing duration attributes for the viewing session.

29. The method of claim 28, wherein the various viewing duration attributes include
5 at least some subset of average viewing duration, viewing duration by day, viewing duration by day-part, channel viewing duration, source network viewing duration, program genre viewing duration, program category viewing duration, and program viewing duration.

30. The method of claim 5, wherein the at least one category profile is a channel
10 change frequency profile identifying various channel change frequency attributes for the viewing session.

31. The method of claim 5, wherein the at least one category profile is a holding
15 factor profile identifying various holding factor attributes for the viewing session.

32. The method of claim 5, wherein the at least one category profile is a dwell time
profile identifying various dwell time factor attributes for the viewing session.

33. The method of claim 5, wherein the at least one category profile is a surf profile
20 identifying various surfing attributes for the viewing session.

34. The method of claim 33, wherein the surf profile identifies attributes including at
least some subset of network surfing, channel surfing, and EPG surfing.

35. The method of claim 5, wherein the at least one category profile is delineated by day or day-part.

5 36. The method of claim 5, wherein the at least one category profile is a probable demographic trait profile predicting various demographic attributes associated with users during the viewing session

10 37. The method of claim 36, wherein the probable demographic trait profile identifies attributes including at least some subset of probable gender, probable age, probable education-level, probable income-level, and probable ethnicity.

15 38. The method of claim 5, wherein the user interactions include at least a subset of channel changes, volume changes, record commands, EPG activation.

20 39. The method of claim 5, wherein said detecting an initiation includes detecting a television power-on event as the initiation of the television viewing session.

25 40. The method of claim 5, wherein said detecting an initiation includes detecting interactivity of the television viewing audience with the television as the initiation of the television viewing session.

41. The method of claim 5, wherein said detecting an initiation includes detecting a predetermined event as the initiation of the television viewing session.

42. The method of claim 41, wherein the predetermined event is a day or day-part transition.

43. The method of claim 5, wherein said detecting a termination includes detecting a television power-off event as the termination of the television viewing session.

44. The method of claim 5, wherein said detecting a termination includes detecting inactivity of the television viewing audience with the television as the termination of the television viewing session.

45. The method of claim 5, wherein said detecting a termination includes detecting a predetermined event as the termination of the television viewing session.

46. The method of claim 5, wherein said detecting a termination includes detecting that a different identity is interacting with the television as the termination of the television viewing session.

47. The method of claim 46, wherein said detecting that a different identity is interacting with the television includes detecting when current interactions with the television deviate from the session profile generated to that point in the session.

48. The method of claim 47, wherein said detecting when current interactions with the television deviate from the session profile generated to that point includes comparing at least a portion of the category profiles that make up the current interactions with corresponding portions of category profiles that make up the session profile generated to that point.

49. The method of claim 48, wherein said comparing at least a portion of the category profiles includes applying weighting factors to the category profiles.

50. The method of claim 5, wherein said detecting a termination includes iteratively correlating the session profile to a plurality of pre-existing signature profiles; matching the session profile to one of the plurality of pre-existing viewing signature profiles having the highest correlation if the correlation is above a predefined matching threshold; iteratively correlating the session profile to the matched signature profile; and terminating the viewing session when the session profile deviates beyond a pre-determined termination threshold from the matched signature profile.

51. The method of claim 50, wherein said iteratively correlating the session profile to a plurality of pre-existing signature profiles includes correlating at least a portion of the category profiles that make up the session profile with corresponding portions of category profiles that make up the plurality of pre-existing signature profiles.

52. The method of claim 51, wherein said correlating at least a portion of the category profiles includes applying weighting factors to the category profiles.

53. The method of claim 50, wherein said iteratively correlating the session profile to the matched signature profile includes correlating at least a portion of the category profiles that make up the session profile with corresponding portions of category profiles that make up the matched signature profile.

54. The method of claim 53, wherein said correlating at least a portion of the category profiles includes applying weighting factors to the category profiles.

55. The method of claim 5, further comprising receiving specific content for display on the television based on the session profile.

56. The method of claim 5, further comprising
correlating the session profile with advertisement profiles; and
selecting an advertisement associated with highest correlation advertisement profile for display on the television;

57. The method of claim 56, wherein said correlating includes correlating at least a portion of the category profiles that make up the session profile with corresponding portions of advertisement profiles.

58. The method of claim 57, wherein said correlating at least a portion of the category profiles includes applying weighting factors to the category profiles.

59. The method of claim 1, further comprising retrieving data associated with at least a subset of the user interactions, wherein said filtering includes filtering the user interactions into the at least one interaction category based at least in part on the associated data.

60. The method of claim 59, wherein the retrieved data includes at least some subset of programs, networks, program genre, and program categories associated with each channel selected during the session.

61. A system for profiling a plurality of identities of a television viewing audience based on the interactivity of the identities with a television, the system comprising:

- means for monitoring user interactions with the television;
- means for filtering the user interactions into at least one interaction category;
- means for processing each of the at least one interaction categories in order to create at least one category profile for each associated category, wherein each of the at least one category profiles identify attributes about the user for that category of interaction; and
- means for generating an interaction profile by combining all of the category profiles.

62. The system of claim 61, wherein

said means for monitoring monitors time associated with each of the user interactions;

and

said means for processing processes at least some subset of data from at least some subset of the at least one interaction category with respect to time in order to create at least one category profile.

5 63. The system of claim 61, further comprising

means for detecting an initiation of a television viewing session; and

means detecting a termination of the television viewing session,

wherein said means for monitoring, said means for filtering, said means for processing and said means for generating continually operate for the television viewing session in order to generate a session profile.

64. The system of claim 63, further comprising means for generating a signature profile based on the session profile.

65. The system of claim 64, wherein said means for generating a signature profile

correlates the session profile to a plurality of pre-existing signature profiles;

determines if the session profile satisfies a correlation threshold with at least one of the pre-existing signature profiles;

selects the pre-existing signature profile having highest correlation value over the

correlation threshold; and

updates the selected pre-existing signature profile to include the session profile.

66. A method of generating a profile for an entity interacting with a television based on one or more interactions of the entity with the television, the method comprising:

monitoring interactivity of the entity with the television;

retrieving data associated with at least some subset of the interactivity;

5 organizing the interactivity into interactivity categories based at least in part on the retrieved data; and

generating the profile based at least in part on the interactivity categories.

67. The method of claim 66, wherein said monitoring includes monitoring at least some subset of channel change activity, volume control activity, and EPG activity.

68. The method of claim 66, wherein the interactivity categories include at least some subset of channels, networks, genres of programs, programs, genre of ads, and ads.

69. The method of claim 66, wherein the interactivity categories are segregated by day part.

70. The method of claim 66, wherein the profile captures viewing habits for the entity.

71. The method of claim 70, wherein the viewing habits include entity preferences for at least some subset of channels, networks, program genre, programs, ad genre, and ads.

72. The method of claim 71, wherein the entity preferences include at least some subset of viewing duration, dwell time, holding factor, and volume level.

73. The method of claim 70, wherein the viewing habits include at least some subset of channel change frequency, channel change order, volume levels, and EPG use.

74. The method of claim 70, wherein the viewing habits are broken out by day part.

75. The method of claim 66, wherein the profile predicts demographic traits associated with the entity.

76. The method of claim 75, wherein the demographic traits are in the form of probabilistic determinations.

77. The method of claim 75, wherein the demographic traits are generated by applying heuristic rules to the interactivity categories.

78. The method of claim 66, further comprising delivering specific content to the entity based on the profiles.

79. The method of claim 78, wherein the specific content includes advertising.

80. The method of claim 66, further comprising comparing the profile to a plurality of signatures that better defines attributes associated with the entity.

81. The method of claim 80, wherein each of the plurality of signatures are a
5 compilation of associated profiles generated from previous interactions with the television.

82. The method of claim 66, wherein the retrieved data includes at least some subset of programs, networks, program genre, and program categories associated with each channel selected by the entity.

83. A system for generating a profile for an entity interacting with a television based on one or more interactions of the entity with the television, the system comprising:

- means for monitoring interactivity of the entity with the television;
- means for retrieving data associated with at least some subset of the interactivity;
- means for organizing the interactivity into interactivity categories based at least in part on the retrieved data; and
- means for generating the profile based at least in part on the interactivity categories.

84. The system of claim 83, wherein said means for generating the profile captures at
20 least some subset of

- viewing duration for channels, networks, program genre, and programs;
- dwelling time for channels, networks, program genre, and programs;
- holding factor for channels, networks, program genre, and programs;

channel change frequency;
surf order; and
volume level.

5 85. The system of claim 83, wherein said means for generating the profile applies heuristic rules to the interactivity categories in order to generate a demographic profile that predicts demographic traits associated with the entity.

10 86. A method of identifying which subscriber from a plurality of potential subscribers is interacting with a television, wherein an actual identity of the subscriber is not required as the subscriber is identified by specific interactivity traits and the subscriber may be a single user or a plurality of users, the method comprising:

15 monitoring interactivity with the television;
 generating a session profile based on the interactivity;
20 comparing the session profile with one or more stored signature profiles, wherein each signature profile is associated with a particular user or group of users; and
 identifying the user or group of users interacting with the television based on said comparing.

25 87. The method of claim 86, wherein the session profile and the signature profiles identify viewing habits of the users including at least some subset of program genre viewing habits, program category viewing habits, network viewing habits, and dwell time habits.

88. The method of claim 86, wherein the session profile and the signature profiles identify probable demographic traits of the users.

89. The method of claim 88, wherein the demographic traits are used to distinguish the session profile from the signature profiles.

90. The method of claim 88, wherein the demographic traits are generated by applying heuristic rules to the interactivity.

91. The method of claim 90, wherein the heuristic rules are applied to program genre and program categories viewed.

92. The method of claim 90, wherein the heuristic rules are applied based on time of viewing.

93. The method of claim 86, further comprising retrieving data associated with at least some subset of the interactivity, wherein said generating includes generating the profile based on the interactivity and the retrieved data.

94. The method of claim 93, wherein the retrieved data includes at least some subset of programs, networks, program genre, and program categories associated with each channel selected by the user.

95. The method of claim 86, further comprising recording time associated with at least some subset of the interactivity, wherein said generating includes generating the profile based on the interactivity and the associated time.

5 96. The method of claim 86, wherein said comparing includes correlating various categories of the session profile with respective categories in the one or more stored signature profiles.

10 97. The method of claim 96, wherein said comparing further includes averaging correlations of each of the categories.

15 98. The method of claim 97, wherein said averaging includes averaging the correlations of each of the categories on a weighted basis.

20 99. The method of claim 86, wherein the signature profiles are a time weighted average of session profiles generated based on previous interactions with the television.

100. The method of claim 86, wherein the signature profiles are standard profiles that represent various attributes of television viewers.

101. The method of claim 86, further comprising updating the signature profile associated with the identified user to include the session profile at end of current session.

102. The method of claim 101, wherein the end of the current session may be marked by some subset of a power off event, a change in viewing attributes, periods of inactivity, end of programs, transition to a next day part, or transition to a next day.

5 103. The method of claim 86, further comprising delivering the user or group of users targeted advertisements based on the signature profile they are identified with.

104. A system for identifying which subscriber from a plurality of potential subscribers is interacting with a television, wherein an actual identity of the subscriber is not required as the subscriber is identified by specific interactivity traits and the subscriber may be a single user or a plurality of users, the system comprising:

means for monitoring interactivity with the television;

means for generating a session profile based on the interactivity;

means for comparing the session profile with one or more stored signature profiles,

15 wherein each signature profile is associated with a particular user or group of users; and

means for identifying the user or group of users interacting with the television based on said comparing.

20 105. The method of claim 104, further comprising means for retrieving data associated with at least some subset of the interactivity, wherein said means for generating generates the profile based on the interactivity and the retrieved data.

106. The method of claim 104, further comprising means for recording time associated with at least some subset of the interactivity, wherein said means for generating generates the profile based on the interactivity and the associated time.

5 107. A device for determining traits associated with an entity interacting with the television, the device comprising:

a network interface for receiving program content from a television delivery network;

a user interface for interacting with the entity;

an event queue for capturing interactions with the entity; and

10 a profile engine for generating a session profile based on the interactions captured in the event queue.

108. The device of claim 107, wherein said network interface also receives program data from the television delivery network and said profile engine generates the session profile
15 based on the interactions and the associated program data.

109. The device of claim 108, further comprising a program database for storing program data.

110. The device of claim 109, wherein the program data stored in the program database includes at least a subset of network, program, program genre, and program category for each channel and each time slot.

5 111. The device of claim 110, wherein the session profile includes a demographic prediction of the entity and said profile engine generates the demographic prediction by applying heuristic rules to the program genre and program category for each channel selected by the entity.

10 112. The device of claim 107, further comprising a clock, wherein said event queue records the time of each captured interaction.

15 113. The device of claim 112, wherein said event queue also uses said clock to capture internal events including at least a subset of end of program and end of day part.

20 114. The device of claim 107, wherein said profile engine determines session boundaries for each interactivity session and generates a session profile for each interactivity session.

25 115. The device of claim 115, wherein said profile engine determines session boundaries by identifying specific events including at least some subset of a power on/off event,

a change in viewing attributes, periods of inactivity, end of programs, transition to a next day part, and transition to a next day.

116. The device of claim 107, further comprising a profile database for storing
5 signature profiles, wherein a signature profile is a compilation of similar session profiles, each signature profile including at least one session profile.

117. The device of claim 116, wherein said profile engine compares session profiles to
the signature profiles and adds the session profile to the signature profile that is most similar as
long as a predefined correlation threshold is met.

118. The device of claim 117, wherein the session profile is added on a time weighted
basis.

119. The device of claim 116, wherein said profile engine compares session profiles to
the signature profiles and stores the session profile in said profile database as a signature profile
if the session profile does not meet a correlation threshold with any of the signature profiles.

120. The device of claim 116, wherein said profile engine determines the amount of
20 time associated with a interactivity session and discards the session profile if the interactivity session does not meet a predetermined duration threshold.

121. The device of claim 107, wherein said profile engine includes a plurality of profile filters, each of said plurality of profile filters processing a portion of the events captured in said event queue and generating a portion of the session profile.

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122. The device of claim 107, wherein said television delivery system is a cable television system, a switched digital video system, or a satellite delivery system.

123. The device of claim 107, wherein said network interface device transmits the profiles to the television delivery system.

124. The device of claim 107, wherein said network interface device transmits channel change commands to the television delivery system.

125. The device of claim 107, wherein the device is coupled to a television and interaction with the television is communicated therethrough.

126. The device of claim 125, wherein the device is a set-top box.

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